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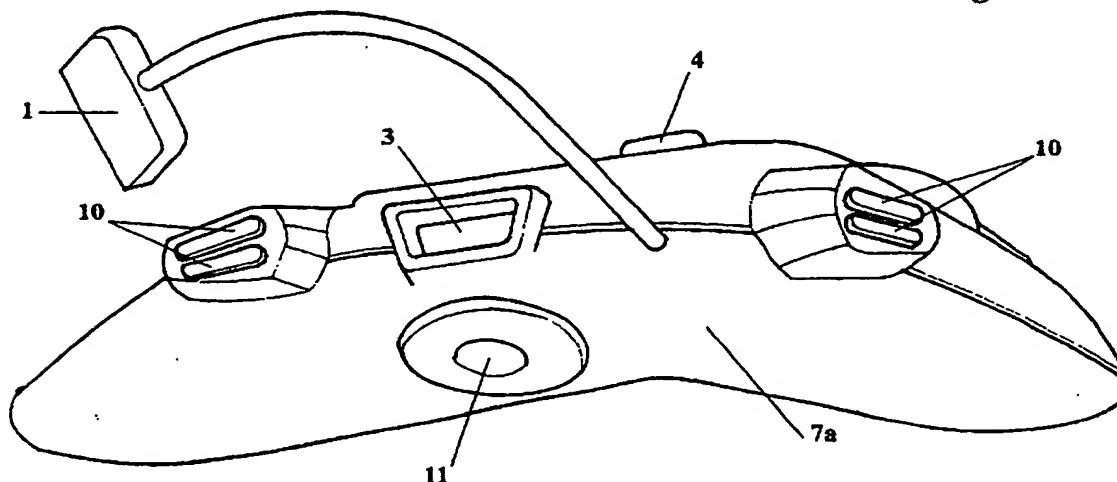**G4A AKS AUXS**
F2Y YSB YTB Y108 Y3121

(56) Documents Cited
WO 90/13865 A1   US 5213337 A

(58) Field of Search
UK CL (Edition S) **G4A AKS AUXS**
INT CL^7 **A63F 13/02 13/06 , G06F 19/00**
Online: **WPI,EPODOC,JAPIO**

(54) Abstract Title
A games controller programmable by telephone through an acoustic or inductive coupler

(57) A games controller possesses emulator buttons 5 (figures 3-4) which initiate the output of programmed sequences of signals. The sequences correspond to the sequential actuations of a specified set of normal control buttons conventionally required to obtain various special moves or to activate "cheats". An acoustic or electromagnetic pickup 11 couples to a telephone receiver and allows the downloading of emulator programs into the emulator's EEPROM.
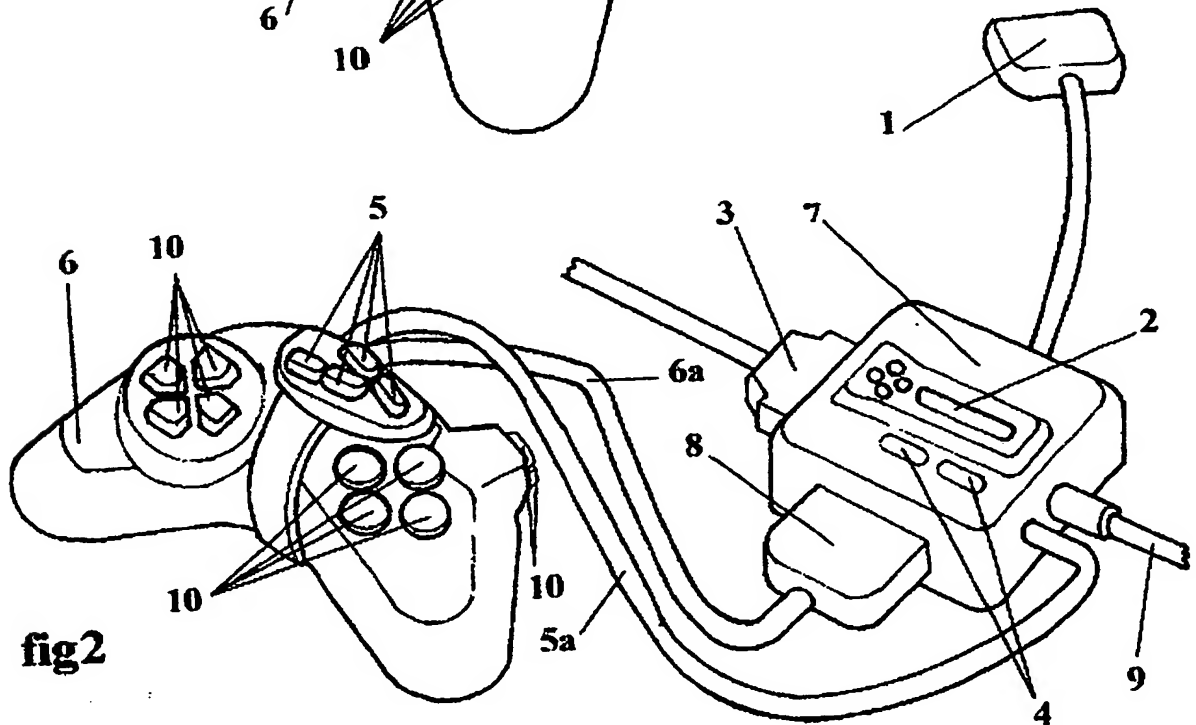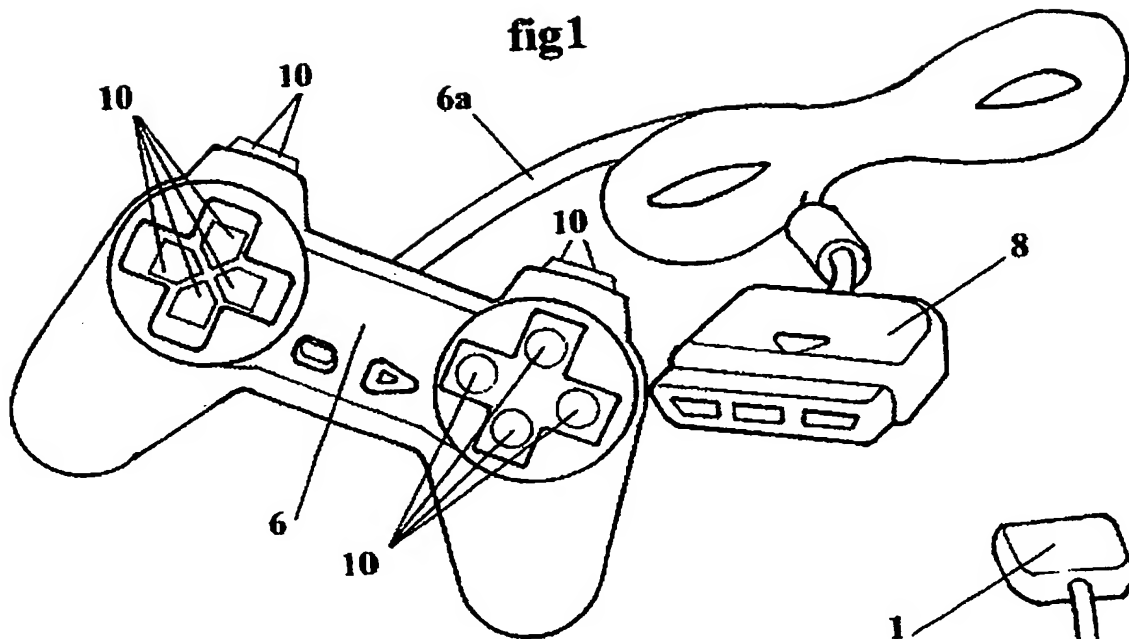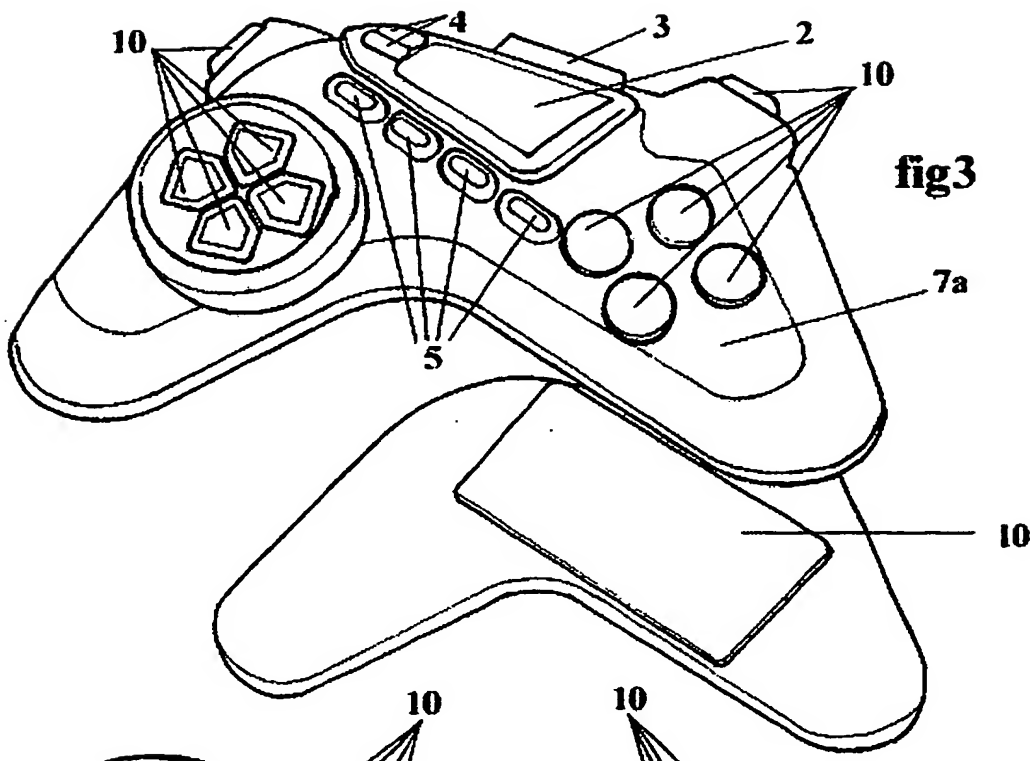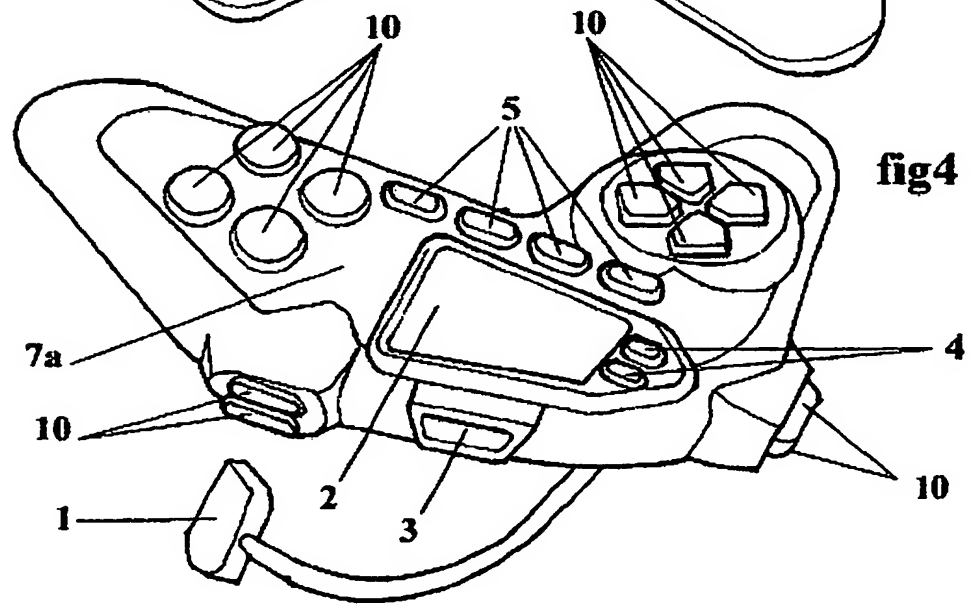
fig5

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fig1

10 10 6a

10 8

6 1

10

5 3 7

6 10 2

6a

8

10 4

5a 9

fig2

fig3

fig4

fig5

fig6

RS232

RS232

12

TX
RX

RX
TX

MPU

11

CTS   I/O
RTS   I/O

FPGA

2

5

RAM

EEPROM

10   1

FIG 7

PORT 1

PORT 2

IC3 ILQ74
E1 C2 C3 E4 C5 C6 C7 E8
A1 C2 C3 A4 A5 C6 C7 A8

IC4 ILQ74
E1 A1 C2 C3 E4 C5 C6 C7 E8
A1 C2 C3 A4 A5 C6 C7 A8

IC5 ILQ74
E1 C2 C3 E4 C5 C6 C7 E8
A1 C2 C3 A4 A5 C6 C7 A8

RN1 270R

RN2 270R

IC1 ULN2003A
I1 I2 I3 I4 I5 I6 I7 I8
O1 O2 O3 O4 O5 O6 O7
GND

IC2 ULN2003A
I1 I2 I3 I4 I5 I6 I7 I8
O1 O2 O3 O4 O5 O6 O7
GND

R1 390R
R2 390R
RV1
3V+
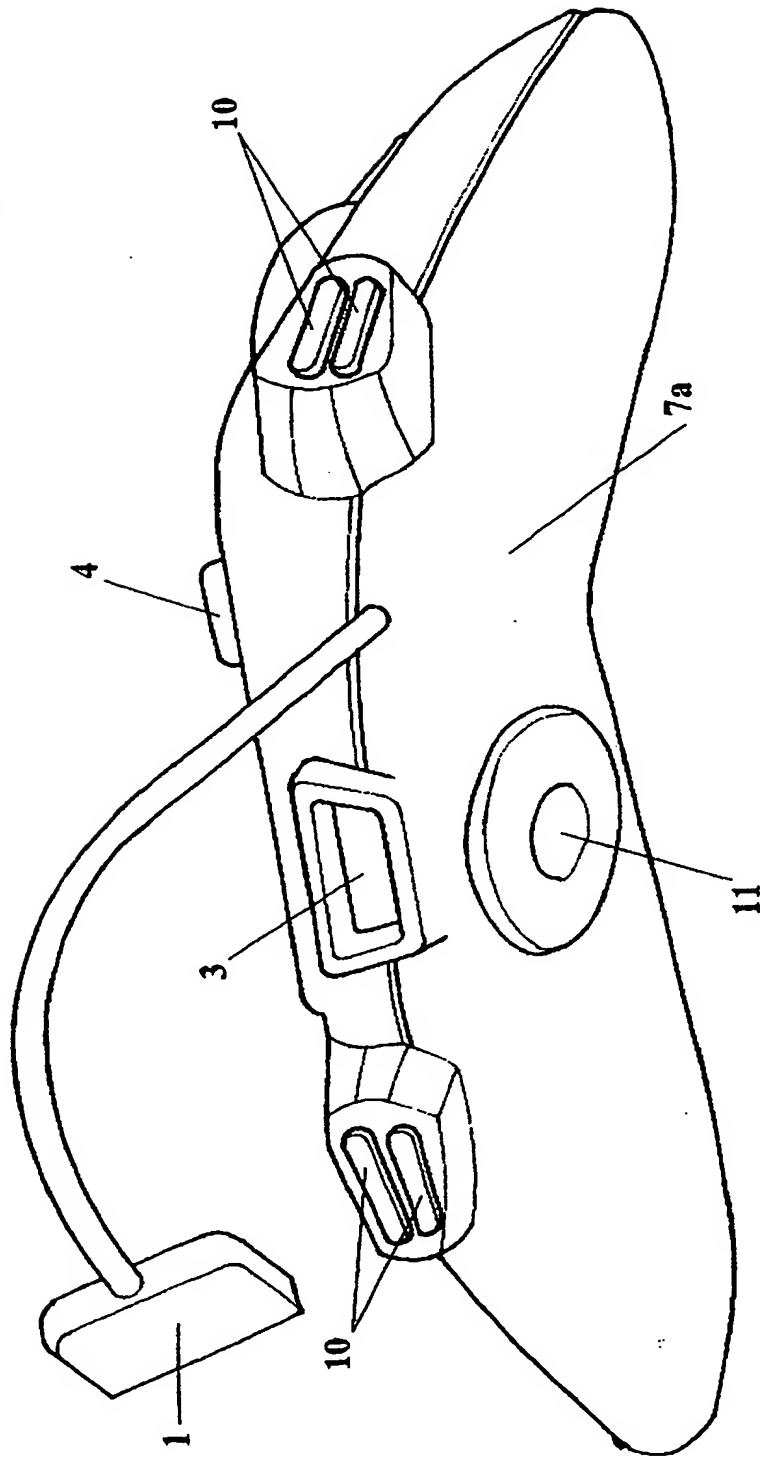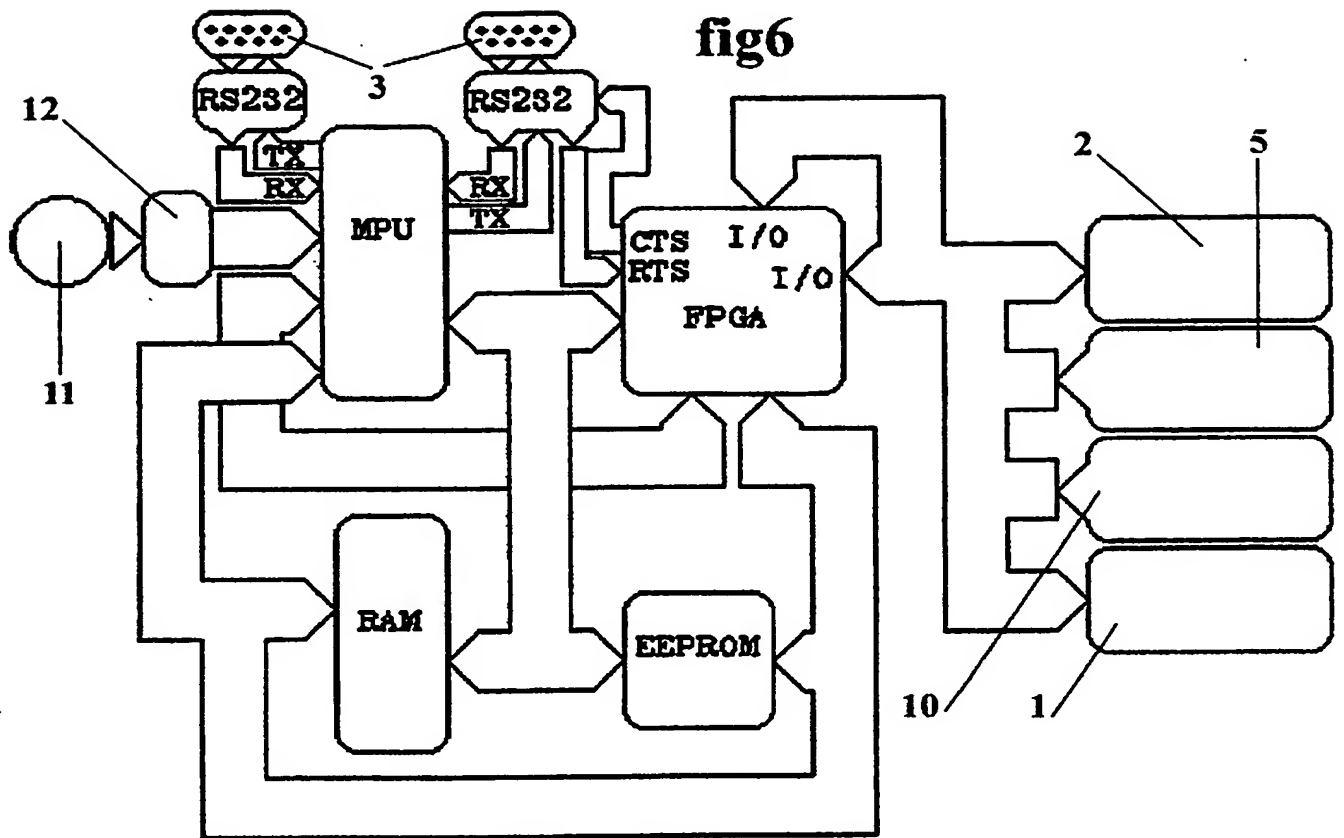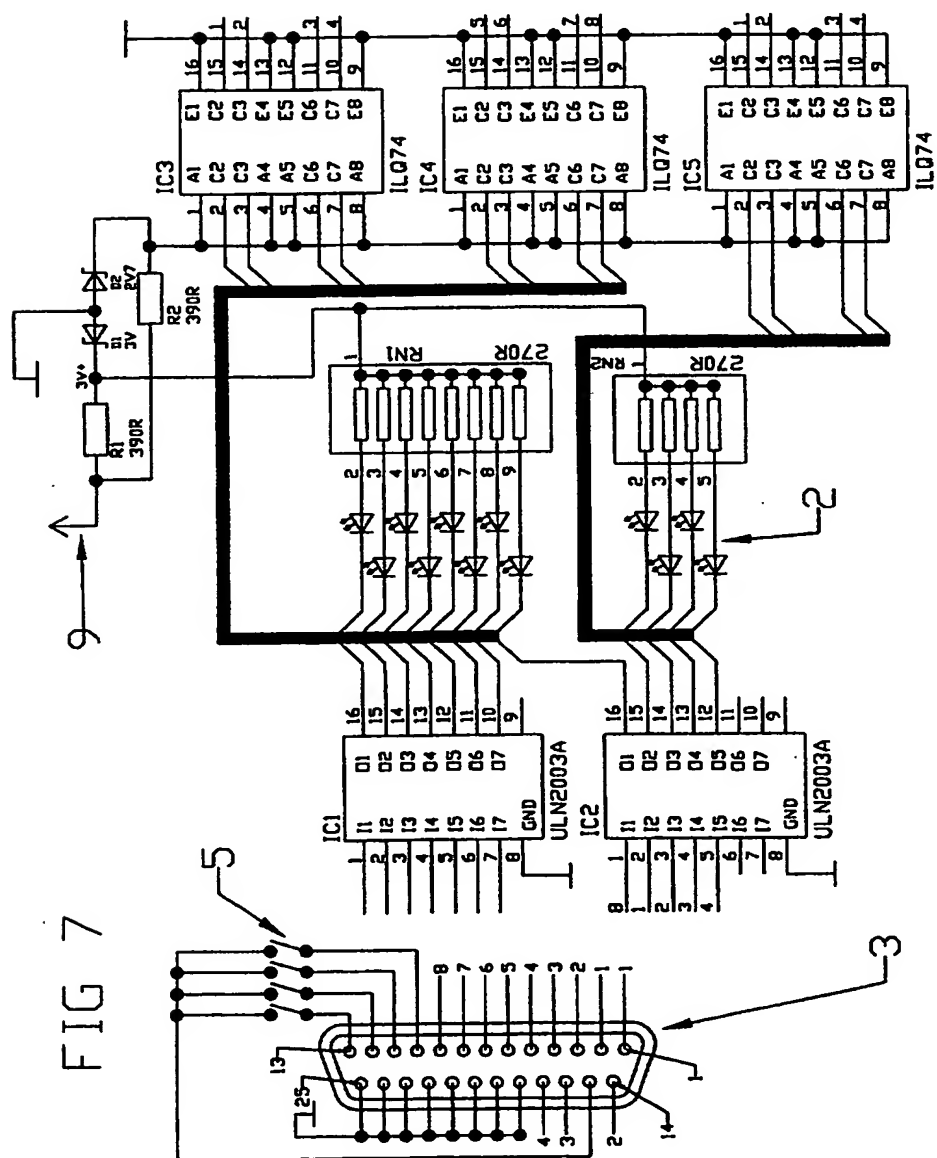
AN EMULATOR DEVICE FOR A GAMES SYSTEM

The present invention relates to an emulator device for a games system.

Home games console systems are a popular consumer item, and a number of different systems are commercially available from manufacturers such as Sony (RTM), Nintendo (RTM) and Sega (RTM).

The majority of games which are played on such systems set tasks or objectives which have to be accomplished, whilst variables such as time, life or power decrease. Although the games are becoming increasingly sophisticated, a player nonetheless usually interacts with a game in essentially the same manner using a games controller either in the form of a controller pad ("joypad") or in the form of a joystick.

Conventional controller pads have a number of different buttons, and it is often a feature of a game that a special or combination ("combo") move can be made if different buttons on the controller pad are pressed in a particular sequence. However, such moves tend to be difficult to master.

It is therefore desired to be able to use such combination moves without having to master difficult keystrokes or combinations on a games controller.

According to the present invention there is provided an emulator device as claimed in claim 1. Further aspects of the present invention are provided by the other independent claims.

The emulator according to the preferred embodiment enables a games player to use special or combination moves without having to master complex keystrokes on a controller pad (or the equivalent on a joystick).

The emulator is particularly advantageous since it reduces the number of buttons or other controls or commands which need to be executed in order to achieve a certain result.

According to an embodiment, the pressing of a single button on the emulator will produce a signal which mimics the signal which would otherwise have been provided if the player had sequentially pressed a combination of buttons on a conventional controller pad as intended by the games designer to produce the combination move. It will be appreciated that the use of such an emulator enables the use of special or combination moves without requiring any particular dexterity or skill.

It is also common for games to include "cheats" or passwords which may be entered, for example, by pressing keys on a games controller in a certain order. A cheat may alter one or more variables of the game (e.g. number of lives, ammunition, money, time etc.), or provide a special advantage which is not normally obtainable during the normal course of game play, or provide access to a level of the game which is not normally available.

The emulator according to a preferred embodiment enables such cheats to be easily used, and can therefore enhance the interest level of a game.

In one embodiment the emulator comprises a device having emulator buttons which is strapped onto or otherwise attached to a conventional controller pad as an add on device.

In another embodiment the emulator buttons may be integrally provided with the controller. In this embodiment a combined emulator and controller pad replaces a conventional controller pad. The emulator's processor and memory circuit board is preferably provided inside the main housing of the controller, but in a less preferred embodiment it may be provided external to the controller in a separate unit.

The emulator device is preferably connectable to a personal computer, and combination moves and/or cheats can be programmed into the device using the computer.

The emulator device may also be arranged additionally/alternatively to receive data via a

telephone, preferably via a transducer inside the
emulator. The emulator device may be acoustically
coupled so that data can be down loaded from an
additional communication port. For example, a telephone

5   help line may be set-up to support new moves and cheats.
A tone pick up device for detecting signals from a
telephone receiver earpiece enables a games player to
receive or download such data. The games player can use
this as well or instead of a PC for downloading new

10   moves and cheats. A tone pick up device such as a coil
or microphone may be provided. An amplifier and/or an
A/D converter may also be provided. If the MPU has an
A/D converter on board then an amplifier may be
provided. If the MPU does not have an A/D converter on

15   board then an A/D converter may be provided.
        One combination move may be associated with each
emulator button, and the player is free to create any
combination move and associate that move (or
alternatively cheat) with an emulator button providing

20   that it works within the confines of the game. This
helps the player to achieve difficult tasks or goals and
generally makes a game more playable and interesting.
        The emulator device may comprise a reprogramable
MPU which may be linked to a personal computer via a

25   communication port on the emulator device and a
communication port on the computer. The emulator may
also receive data via a telephone through a transducer
inside the emulator. The data for the moves and/or
cheats can be stored in a EEPROM which may be part of

30   the MPU or alternatively it may be provided in an
external device.
        The preferred embodiment is designed to connect to
a controller port of a games system such as a Sony
Playstation (RTM) console, and is also easily adapted to

35   connect with other game systems such as those produced
by Nintendo (RTM) and Sega (RTM).
        According to a preferred embodiment, the emulator
uses data downloaded from a PC or a telephone via a

pickup device to tell the emulator joypad or controller which combination of joypad or controller buttons are to be stored in memory, preferably an EEPROM. This allows the system to be adaptable and to be up-dated with new
5   special moves or cheat data whenever desired.

The special moves and cheat data may be provided in various data formats such as one or more of the following: a floppy disk, CD ROM, email or email attachment, via an Internet Website, and from a
10   telephone help line.

Real time special move and cheat emulation is enabled by the preferred embodiment and this enables a player to control and execute all possible programmed moves whilst playing a game.

15   The combination moves can be triggered by a program or routine stored in the emulator controller which is executed by pressing a few, preferably only one button on the emulator device. The end result is that a real time special move and/or cheat emulation device is
20   provided.

The configuration of individual emulation buttons can be easily changed so that the same button can be associated with different pre-programmed moves and cheats.

25   The functions the emulator joypad uses to control the moves and cheats can be changed either through using the PC or through using a menu driven display such as a LCD or LED display which preferably forms an integral part of the emulator device.

30   The emulator joypad or controller may be connected through the control port of the games system like a conventional joypad, joystick or control pad. However, the emulator has at least one additional communication port for receiving data, preferably from a personal
35   computer.

The emulator firmware preferably instructs a MPU to control all of the functions of a conventional joypad. The instructions also tell it how to control its' added

functionality of the special move emulator. The
firmware may be configured by data stored in an EEPROM
and can arrange for one or more of the emulation buttons
to trigger a special move function or routine stored in
5   memory. This routine emulates the processes that are
triggered on board the MPU when the games player is
controlling the buttons manually but in a sequence
defined by the data stored in memory. The routine also
controls the communication signals that are sent to the
10   games system thus emulating a special move or cheat.
All of these emulation processes can take place whilst
the games player is interacting with the game.

Preferably, the microprocessor emulates all the
functions of a conventional joypad and the
15   microprocessor controls all added functions.

Preferably, instructions are processed on board the
microprocessor and a FPGA.

Preferably, the FPGA may control a plurality of
emulator devices, signals, inputs and outputs.
20   Preferably, data stored in the emulator's memory
(RAM) may be edited or manipulated.

Preferably, data stored in the emulator's memory
(EEPROM) may be updated.

Various embodiments of the present invention will
25   now be described, by way of example only, and with
reference to the accompanying drawings in which:

Fig. 1 shows a conventional games controller;

Fig. 2 shows a first embodiment of the present
invention;
30   Fig. 3 shows a second embodiment of the present
invention with the case open to show the processor PCB;

Fig. 4 shows the second embodiment of the present
invention with the case closed;

Fig. 5 shows the second embodiment of the present
35   invention turned over to show a tone pickup or receiver
device;

Fig. 6 shows a block diagram of a preferred
processor board;

Fig. 7 shows a circuit diagram of an embodiment of the present invention.

A conventional games controller 6 having a number of directional and control buttons 10 is shown in Fig.
5   1. The games controller 6 is connected by a cable 6a to a games system via a connector 8.

A first embodiment of the present invention which relates to an add-on device is shown in Fig. 2. According to this embodiment, a number of emulator
10   buttons 5 are strapped or otherwise attached to a conventional games controller 6. The emulator buttons 5 are connected to an emulator device 7 via cable 5a and the conventional connector 8 is also plugged into the emulator device 7 via connector 8. The emulator device
15   7 has a number of function buttons 4 and optionally also an LED or other type of display 2. The emulator device 7 is connected to a games system by a conventional connector 1. The emulator device 7 may be powered by a power source (not shown) connected to the emulator
20   device 7 by a power connector 9. The emulator device 7 is also preferably connectable to a PC via an emulator communication/download connector or socket 3 through which the emulator device 7 may be programmed.

A second embodiment of the present invention which
25   relates to an integral emulator and controller is shown in Figs. 3-5. This embodiment differs from the first embodiment in that emulator buttons 5 are integrated into a games controller device 7a i.e. both conventional control buttons 10 and emulator buttons 5 are provided
30   in the same controller 7a. A number of function buttons 4 may also be provided on the controller device 7a for selecting between different emulator functions. A LCD or other type of display 2 may also be provided to indicate the status of the emulator buttons 5 or the
35   emulator functions. The games controller device 7a is also preferably provided with a PC to emulator communication/download connector or socket 3. A PCB 10 for both the emulation functions and the other games

control functions is preferably housed within the casing
of the games controller device 7a. The games controller
device 7a is preferably connected to a games system
using a conventional connector 1. Fig. 5 shows a tone
5   pickup device 11 such as a coil or microphone which may
be provided in order to download data from a telephone
or like device. The tone pickup device 11 may be
provided in addition or as an alternative to the PC
socket 3.

10   Fig. 6 shows a block diagram of a preferred
processor board showing the interconnection of output
devices such as a liquid crystal display 2 and the
connector 1 between the emulator and the games console,
input devices such as the emulator buttons 5 and joypad
15   buttons 10, and one or more PC to emulator
communication/download links 3.

        Fig. 7 shows a circuit diagram of a less preferred
embodiment. According to this embodiment an emulator
unit having emulator buttons 5 is provided intermediate
20   a PC and a conventional control pad 6 (the rear view of
which is indicated as 6.1). The input of the emulator
unit is connected to a PC, preferably using a printer
port connector 3. The emulator unit is powered by a
power supply 9 and has an LED display 2. The output of
25   the emulator unit is directly connected to a
conventional games controller 6 by e.g. soldering
connections on to the PCB of the games controller 6
across the games controller buttons. The emulator
device can therefore control all the controls on the
30   games controller 6.

Annex of Preferred features

1.   An emulator device connectable to or integral with a games controller for a games system, wherein, in use, said emulator device produces a signal which generally replicates at least part of the signal which would otherwise have been produced upon activating the games controller a multiple number of times.

2.   An emulator as claimed in claim 1, wherein said games controller is a controller pad having a plurality of buttons.

3.   An emulator as claimed in claim 1 or 2, wherein said games controller comprises a joystick.

4.   An emulator as claimed in claims 1, 2 or 3, wherein said emulator replicates a combination or special move.

5.   An emulator as claimed in any preceding claim, wherein, in use, said emulator outputs a signal representing a cheat code.

6.   An emulator as claimed in any preceding claim, further comprising user operable programming means for programming said emulator.

7.   An emulator as claimed in claim 6, wherein said user operable programming means comprises a data transmission link for connecting said emulator to a personal computer.

8.   An emulator as claimed in any preceding claim, wherein said emulator comprises a reprogrammable microprocessor unit.

9. An emulator as claimed in any preceding claim, wherein said emulator comprises an EEPROM.

10. A personal computer in combination with the emulator of any preceding claim.

11. An emulator for emulating keystrokes on a games controller pad, said emulator being connectable to a personal computer and to a games console, and wherein said emulator comprises a microprocessor unit.

12. An emulator as claimed in claim 11, wherein said emulator further comprises a LCD display.

13. An emulator as claimed in claim 11 or 12, wherein said emulator further comprises a communications port for linking said emulator to a personal computer.

14. An emulator as claimed in claim 11, 12 or 13, wherein said emulator further comprises non-volatile memory, preferably an EEPROM.

15. An emulator as claimed in any of claims 11-14, wherein said emulator further comprises a FPGA.

16. An emulator as claimed in any of claims 11-15, wherein said emulator further comprises RAM.

17. An emulator as claimed in any of claims 11-16, wherein, in use, said emulator receives data from a personal computer.

18. An emulator as claimed in any of claims 11-17, wherein said emulator is programmable on a real time basis.

19.   An emulator as claimed in any of claims 11-18,
wherein said emulator further comprises a number of
emulator buttons, each said button being re-
programmable.

5

20.   An emulator as claimed in claim 19, wherein the
function of at least one said emulator button is
changeable by a signal from said personal computer.

10   21.   An emulator as claimed in claim 19 or 20, wherein
the function of at least one said emulator button is
changeable using a menu driven display.

22.   An emulator for a games system comprising a joypad
15   having control buttons and emulation buttons, wherein a
special move or cheat is emulated, in use, by triggering
a program stored in an EEPROM in said joypad.

23.   An emulator as claimed in any preceding claim,
20   wherein said emulator further comprises a coil for
picking up changes in an electromagnetic field produced
by the speaker of a telephone receiver.

24.   An emulator as claimed in any preceding claim,
25   wherein said emulator further comprises a microphone or
acoustic coupler for picking up high and low frequency
tones produced by the speaker of a telephone receiver.

25.   An emulator as claimed in any preceding claim,
30   wherein said emulator further comprises an analogue to
digital converter and/or amplifier.

26.   An emulator as claimed in any preceding claim,
wherein analogue data is converted into digital data and
35   is then downloaded in EEPROM.

27.   An emulator as claimed in any preceding claim,
wherein said emulator receives data from a telephone

support line or the like.

28. A device for mimicking a combination of moves made on a games controller pad or joystick forming part of a
5   home games console, wherein said device comprises:
    a LED or LCD display; and
    reprogrammable memory means.

29. A games controller having a plurality of control
10 buttons and at least one emulator button, wherein pressing said at least one emulator button n times produces an output signal equivalent to pressing said control buttons at least n+1 times.

15 30. A games controller comprising:
    control buttons;
    programmable emulator buttons;
    a visual display; and
    means for connecting said games controller directly
20 to a games console and also simultaneously directly to a personal computer.

31. An emulator joypad or joystick comprising:
    a microprocessor;
25 a data link for receiving data from a personal computer; and
    means for replicating a plurality of command signals upon a single activation of said emulator.

30 32. The combination of a real-time programmable emulator for a home games console system, a home games console system, and a plurality of user operable games control buttons or switches.

35 33. An emulator substantially as hereinbefore described with reference to any of Figs. 2-7.

Claims

5   1.   An emulator for a games system comprising a joypad
having control buttons and emulation buttons, wherein a
special move or cheat is emulated, in use, by activating
an emulation button to trigger a program stored in an
EEPROM in said joypad, wherein said emulator further
10   comprises a coil for picking up changes in an
electromagnetic field produced by the speaker of a
telephone receiver.

2.   An emulator as claimed in claim 1, wherein said
15   emulator further comprises a microphone or acoustic
coupler for picking up high and low frequency tones
produced by the speaker of said telephone receiver.

3.   An emulator as claimed in claim 1 or 2, wherein
20   said emulator further comprises an analogue to digital
converter and/or amplifier.

4.   An emulator as claimed in any of claims 1, 2 or 3,
wherein analogue data is converted into digital data and
25   is then downloaded in EEPROM.

5.   An emulator as claimed in any preceding claim,
wherein said emulator receives data from a telephone
support line.

Amendments to the claims have been filed as follows

5   1.   An emulator connectable to or integral with a games controller for a games system, wherein a special move or cheat is emulated, in use, by activating an emulation button, wherein said emulator further comprises a coil for picking up changes in an electromagnetic field
10   produced by the speaker of a telephone receiver.

2.   An emulator as claimed in claim 1, wherein said emulator further comprises a microphone or acoustic coupler for picking up high and low frequency tones
15   produced by the speaker of said telephone receiver.

3.   An emulator as claimed in claim 1 or 2, wherein said emulator further comprises an analogue to digital converter and/or amplifier.

20

4.   An emulator as claimed in any of claims 1, 2 or 3, wherein analogue data is converted into digital data and is then downloaded in EEPROM.

25   5.   An emulator as claimed in any preceding claim, wherein said emulator receives data from a telephone support line.

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Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

    UK Cl (Ed.S): G4A (AUXS,AKS)

    Int Cl (Ed.7): G06F (19/00) A63F (13/02,13/06)

Other: Online:WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	US5213337 Sherman. See the abstract.	-
A	WO90/13865 A1 Softel. See the abstract.	-